GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

No action as of 6/1/78 OAL

Date: September 13, 1977

Project Title: Performance Criteria For Soft Drink Display Racks

Project No: A-232-832

Project Director: Mr. Lynn Tessner

Sponsor: Coca-Cola USA

Agreement Period: From 8/16/77 Until 9/16/77

Type Agreement: Ltr. dtd. 8/16/77 & Mod. dtd. 8/23/77

Amount: $2,319

Reports Required: Final Report

Sponsor Contact Person (s):

Technical Matters

Contractual Matters
(thru OCA)

Robert A. Haag
Section Mgr.
Bottling/Canning Operations Engr.
Coca-Cola USA
P.O. Drawer 1734
Atlanta, Georgia 30301
897-2121

TERMINATED

Defense Priority Rating:

Assigned to: Technology & Development Laboratory (School/Laboratory)

COPIES TO:

- Project Director
- Division Chief (EES)
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- Project Code (GTRI)
- Other Betty Yarborough

CA—3 (3/76)

GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION

no action
ADL out

Date: March 8, 1978

Project Title: Performance Criteria For Soft Drink Display Racks

Project No: A-232-832

Project Director: Mr. Lynn Tessner

Sponsor: Coca-Cola USA

Effective Termination Date: 2/28/78

Clearance of Accounting Charges: 2/28/78

Grant/Contract Closeout Actions Remaining:

- x Final Invoice ~~and Closing Documents~~
- _ Final Fiscal Report
- _ Final Report of Inventions
- _ Govt. Property Inventory & Related Certificate
- _ Classified Material Certificate
- _ Other _____

Assigned to: Technology & Development Laboratory (School/Laboratory)

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Project File (OCA)
Project Code (GTRI)
Other _____

CA—4 (3/76)

A-252-852
Final Report

ENGINEERING EXPERIMENT STATION
GEORGIA INSTITUTE OF TECHNOLOGY • ATLANTA, GEORGIA 30332

October 31, 1977

Mr. Robert A. Haag
Section Manager
Bottling/Canning Operations Engineer
Coca-Cola USA
Post Office Drawer 1734
Atlanta, Georgia 30301

Dear Bob:

The enclosed standards are now complete. The only change is the dropping of the impact test. The racking test gives similar results that are easier to measure.

The Streater display rack would not pass these standards as it failed at a total load of 77 pounds per square foot or 481 pounds. Since a shelf filled with 2-liter bottles would weigh approximately 312 pounds, double that would equal 624 pounds or approximately 100 pounds per square foot.

The four posted display supported a load of 117.5 pounds per square foot without failure. I was hesitant to put anymore on as 882 pounds falls very hard.

The plastic tray and paper tube display passed the load test, but failed the racking test very badly.

Bob, these standards should be a good starting point but remember they are based on testing only one rack of each type. Therefore, the load figures may be low.

Some thought should be given to reducing the number of different positions that a shelf can be placed. At present a shelf can be mounted very low and well over 400 pounds placed on the shelf. If the shelf could not be placed any lower than say 26 inches, the chance of overload would be reduced. If the shelf were mounted down low and overloaded with cans and a child were to pull down hard or climb on the shelf, the Streater display could very easily fail.

If we can be of any further assistance, please let me know.

Yours truly,

R. Lynnard Tessner
Industrial Extension Division

An Equal Employment/Education Opportunity Institution

COCA-COLA DISPLAY PERFORMANCE STANDARDS

These standards are to be considered minimum standards for display cases for the Coca-Cola Company. Any supplier is free to submit test data that will support the contention that a different standard will still result in a display that is safe and attractive. If a display is proven to be safe and attractive that does not meet these standards, the display may still be acceptable to the Coca-Cola Company. The final decision, however, shall rest with the Coca-Cola Company.

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Paint

The paint used on displays for the Coca-Cola Company shall be of a shade that matches the colors listed below and shall have a gloss equal to the standard given below. The paint surface should resist abrasion and household chemicals as per the standards listed.

Color: The colors used shall match the standard Coca-Cola colors when using ASTM-D-1535-68 (Reapproved 1974) "Standard Method of Specifying Color by the Munsell System." The tolerance for each color shall be specified by the Coca-Cola Company.

Gloss: The gloss of all paints used shall be a minimum of 70 when measured at an angle of 60 degrees by ASTM-D-523-67 (Reapproved 1972) "Standard Method of Test for Specular Gloss."

Film Thickness: No film thickness standard is set for the paint; however, the paint must cover all surfaces and prevent the loss of strength due to corrosion. In addition, all product support surfaces for product display must have a film thickness sufficient to pass the following abrasion test.

Abrasion Resistance: The paint film shall have an abrasion coefficient of 48 l/mils as defined in ASTM-D-968-51 (Reapproved 1972) "Standard Method of Test for Abrasion Resistance of Coatings of Paint, Varnish, Lacquer, and Related Products by the Falling Sand Method."

Film Hardness: The paint film shall also have a gauge hardness of 5H and a scratch hardness of F as defined in ASTM-D-3363-74 "Standard Method of Test for Film Hardness by Pencil Test."

Finish Test: The finish shall be tested in accordance with ASTM-D-1308-57 (Reapproved 1973) "Standard Method of Test for Effect of Household Chemicals on Clear and Pigmented Organic Finishes."

Metal panels for test should be cut from a product support shelf and shall be 2" x 6" in size.

Reagent for test shall be:

1. Coke
2. 6 tablespoons of TSP (trisodium phosphate) in one gallon of water

Tests:

1. Covered Spot Test--shall be on a product support surface and shall be for a period of 3 days. The surface may show color change but must recover in 24 hours.

2. Open Spot Test--let reagent dry on panel. After reagent has dried on panel, wipe clean with plain water and allow 24 hours for recovery. No visible mark is allowed.

3. Immersion Test--panels shall show no rust or other film failure after 7 days at room temperature immersed in either reagent. Edges shall be sealed by dipping the edge into the same type of paint used to paint the panel. The paint should cure while in the horizontal position.

Lights

All display cases that have lights attached or installed shall comply with Underwriters Laboratories, Inc., standards for safety (UL) 65-Updated 1977 "Wired Cabinets." (Note cord length limited to 12" by this standard).

Structural Requirements

1. General Requirements--The display cases should be of sound construction with no exposed sharp edges or corners. The corners should be well rounded or protected so as to prevent injury to the body or clothes of a shopper. In order to keep the product storage surfaces clean, the lowest shelf must be a minimum of 4" from the floor. If the bottom is not skirted, then the bottom shelf should be 6" off the floor to allow cleaning beneath the display.

2. Product display surfaces shall support a total load of 300 pounds per square foot for botton shelves and 100 pounds per square foot for other shelves without collapsing. All shelves are to be loaded simultaneously.

3. When loaded to 150 pounds per square foot on the bottom shelf and 50 pounds per square foot on the other shelves, the display must support a 50 pound weight applied for two minutes in sequence from the bottom shelf up to the top shelf. The load shall be applied to the center of the shelf on the front edge. The shelf shall not permanently deflect.

4. When loaded to 50 pounds per square foot, the slope of a cantilever display surface shall not be less than $1/2^{o}$ negative (sloping down to the support).

5. When loaded to 50 pounds per square foot, the product display shelves shall deflect not more than 1/16" per foot of shelf length with no permanent deflection.

6. The open side or sides of a display rack shall have a retaining lip of at least 3/16" high. All other sides shall have a restrainer of at least 1" in height, which may be removable.

7. All product display surfaces shall be smooth enough to allow a small bottle of Coke to slide without tipping when pushed at a point 1" from the bottom of the container. If a display rack is designed for cartons only, the carton must slide freely in any direction when pushed 1" from the bottom.

8. The display shall not rock or rack side to side or front to back more than $\pm$ .003 per inch of height when pushed or pulled with a force of 50 pounds applied at a height of 60".

9. Structures that do not bolt together must go together in a fail-safe manner so that a shelf or support cannot slip out of a support and fail.

10. All shelves shall be designed to fail by bending in a direction such that bottles will tend to slide together rather than off the shelf.

Packaging: Displays shall be packaged for shipment in such a manner as to minimize possible damage in shipment.

Assembly Instructions: Assembly instructions shall be clear and well written. An exposed view showing correct assembly sequence should be provided.